

AIQ – Assignment for Backend Engineer Roles



Dear Candidate,

Thank you for your interest in joining AIQ. As part of the hiring process, we invite you to complete the two technical challenges described below **within 7 calendar days from receipt**.

Challenge 1

Suppose we want to show a map to visualize the annual net generation of power plants of the US.

The challenge consists of the following requirements:

- We want to display the top N plants.
- On the map we want to show absolute value and percentage of the plant's federal state.
- We want to be able to filter by state so we can zoom in.
- The data usually comes as an excel file:
<https://www.epa.gov/egrid/download-data> (eGRID2021 Data File)
- Build a typescript backend that backs this map with a REST API.
- Containerize the solution.

Challenge 2

Attached is a csv file which contains image data referenced by the column depth. The rest of the columns (200) represents image pixel values from 0 to 255 at each depth.

The challenge consists of the following requirements:

- The image size is relatively big. Therefore, there is a need to resize the image width to 150 instead of 200.
- The resized image has to be stored in a database.
- An API is required to request image frames based on depth_min and depth_max.
- Apply a custom color map to the generated frames.
- The solution should be based in Python.
- Containerize the solution.

Guidelines

- Readiness of the code is very important.
- Demonstration of great understanding of the requirements is extremely important.
- Reasonable assumptions are very welcome, though it must remain within the required scope.
- We appreciate candidates that do just the extra mile to anticipate further changes in their solution.
- Both challenges must be completed within 7 calendar days from the time you receive this document.

If you have any questions, please feel free to reach out to us.

We wish you best of luck!